



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PC03-SY065	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP2003/003801	International filing date (<i>day/month/year</i>) 27 March 2003 (27.03.2003)	Priority date (<i>day/month/year</i>) 24 May 2002 (24.05.2002)
International Patent Classification (IPC) or national classification and IPC H01J 31/12, 29/28, 29/92		
Applicant SONY CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 14 August 2003 (14.08.2003)	Date of completion of this report 04 February 2004 (04.02.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

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International application No.

PCT/JP2003/003801

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the drawings:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☒ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

Claims 1-13 and claims 25-29 are inventions ("Inventions A") having the common special technical feature that a gap length between anode electrode units is within a certain range, and claims 14-24, claims 30-33 and claims 34-36 are inventions ("Inventions B") having the common special technical feature that the area and size of anode electrode units are within a certain range.

However, the technical feature common to Inventions A and Inventions B is the point of an anode electrode is made of two or more anode electrode units in a known cold cathode electrode field electron emission display device. This point is publicly known, as disclosed in the specification by the applicant as being described in JP 2001-243893 A; therefore, no technical relationship including one or more common "special technical feature(s)" is found between Inventions A and Inventions B.

The special technical features of the Inventions A and the Inventions B respectively relate, as described above, to a gap between anode electrodes and to the area and size of an anode electrode unit, and these do not correspond to each other.

Therefore, no technical relationship is found including one or more corresponding "special technical feature(s)" between Inventions A and Inventions B.

The expression "special technical feature" means a technical feature that defines a contribution to the prior art which each of the claimed inventions, considered as a whole, makes (PCT Rule 13.2).

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos. _____

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	3-6, 10-24, 26-28, 30-36	YES
	Claims	1, 2, 7-9, 25, 29	NO
Inventive step (IS)	Claims	3-10, 16, 22	YES
	Claims	1, 2, 4-9, 11-15, 17-21, 23-36	NO
Industrial applicability (IA)	Claims	1-36	YES
	Claims		NO

2. Citations and explanations

Document 1: JP, 3199682, B2 (Canon Inc.), August 20, 2001 (08.20.01)
 Document 2: JP, 2000-251797, A (Canon Inc.), September 14, 2000 (09.14.00)
 Document 3: JP, 2001-243893, A (Sony Corporation), September 7, 2001 (09.07.01)
 (All of the above documents are cited in the ISR.)

Claims 1 and 2

Claims 1 and 2 do not appear to involve an inventive step based on documents 1 and 2.

Document 1 (paragraphs 0089-0090, and Figs. 29 and 30) describes an image forming device constituting a face plate 2 (corresponding to an anode panel) comprising a substrate 8, fluorescent film 10 formed on the surface of the substrate 8, metal back 9 (corresponding to an anode electrode) and an extraction part (corresponding to a power supply line), wherein the metal back 9 is subject to division patterning, and an electron emission device connected to an outside power source (corresponding to an anode electrode control circuit) via current limiting resistance (corresponding to resistive material) and an extraction part for every divided row. Document 1 (paragraphs 0225-02301) also describes, as an embodiment for the division of the metal back, setting an interval between metal backs (corresponding to gap length) at 50 μ m and anode voltage at 5.0kV.

Document 2 describes that an anode substrate comprises a glass substrate 5, a fluorescent film 4 formed on the surface of the glass substrate 5, a metal back 2 (corresponding to an anode electrode) and a high voltage application part 1 (corresponding to an electric supply line), that the metal back 2 is divided at an inter-electrode cut part 42, high voltage is applied to each metal back division via a part where inter-electrode cut part 41 is formed every divided metal back (corresponding to a resistive material) and via the high voltage application part, the width of the inter-electrode cut part (corresponding to a gap length) is set at 200 μ m and anode voltage at 10kV; therefore, it would be obvious to a party skilled in the art to provide a circuit corresponding to an anode electrode control circuit even though it is not clearly defined.

Claims 3, 10, 16 and 22

Claims 3, 10, 16 and 22 appear to be novel and involve an inventive step over documents 1-3.

Documents 1-3 neither describe nor suggest constituting a power supply line from two or more power supply line units connected in series via a resistive material.

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VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. The condition of " $(V_A/7)^2 \times (S/d) \leq 2250$ " set forth in claims 6, 14, 28 and 30, according to the description in the specification (pages 26-30), is a condition for vaporizing a size corresponding to one sub-pixel in an anode electrode unit under the specific conditions that an anode electrode is made of aluminum with the thickness of $1\mu\text{m}$, and one sub-pixel is 0.04mm^2 . However, these specific conditions are not defined in each of the above claims, and critical meaning of the numerical limitations is unclear.
2. In the passage "one anode electrode unit is connected to an anode electrode control circuit" in claims 25 and 30, it is not clear whether there is at least one anode electrode unit connected to the anode electrode control circuit or whether there is only one. Also, if there is only one, this constitution does not correspond to an embodiment because, in Fig. 17 for example, an anode electrode unit on the right side of the drawing is connected to an anode electrode unit via resistive element R_0 , but anode electrode units other than that of right side of the drawing also are connected through resistive element layer 128 and resistive element R_0 .

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V:

2. Continuation of documents and discussion (1)**Claims 4 and 5**

Claims 4 and 5 do not appear to involve an inventive step based on documents 1 and 3, or documents 2 and 3.

Document 3 (paragraphs 0087-0091, and Figs. 13 and 14) describes a display panel comprising a stripe shaped lower electrode layer 331 on a substrate 310, fluorescent layer group Gr2 that is an aggregate of a plurality of single phosphors layer disposed in a striped shape, and an upper electrode layer 332 disposed in order; therefore, it would be an obvious combination to a party skilled in the art to provide both a stripe shaped lower electrode layer as well as a metal back in documents 1 and 2, too.

Claims 6, 14, 15 and 21

Claims 6, 14, 15 and 21 do not appear to involve an inventive step based on document 1.

Document 1 (paragraphs 0101-0106, and Figs. 1 and 3) describes that ITO film of an electron source of 1000x500 elements is divided into 1000 lines, and with a gap between a face plate and a rear plate at 2mm and high voltage V_A , voltage of 5kV is applied. Document 1 (paragraphs 0017-0019) also describes that an electron source of a similar 1000x500 element constitution has a cathode area of 100cm². Therefore, $(V_A/7)^2 \times (S/d)$ is approximately 2.6 under the conditions of $d=2\text{mm}$, $V_A=5\text{kV}$ and $S=100 \times 100 / 1000 = 10\text{mm}^2$. Dividing the above metal back in a similar manner would be an obvious combination to a party skilled in the art.

Claims 7-9

Claims 7-9 do not appear to be novel based on document 2.

Document 2 (paragraphs 0031-0032) describes providing a conductive film 9 at an anode cut part and selecting resistivity of a conductive film accordingly.

Claims 11 and 12

Claims 11 and 12 do not appear to involve an inventive step based on documents 2 and 3.
See the comments for claims 4 and 5.

Claims 13, 19 and 20

Claims 13 and 19-21 do not appear to involve an inventive step based on documents 1 and 2.

It would be easy for a party skilled in the art to provide in document 1 a conductive layer similar to that of document 2.

Claims 17 and 18

Claims 17 and 18 do not appear to involve an inventive step based on documents 1 and 3.
See the comments for claims 4 and 5.

Claims 23 and 24

Claims 23 and 24 do not appear to involve an inventive step based on documents 1-3.
See the comments for claims 4 and 5.

Claims 25 and 29

Claims 25 and 29 do not appear to involve an inventive step based on document 2.
In document 2, too, at least one divided metal back is connected to an anode electrode control circuit.

Claims 26 and 27

Claims 26 and 27 do not appear to involve an inventive step based on documents 2 and 3.
See the comments for claims 4 and 5.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V:

2. Continuation of documents and discussion (2)**Claims 28, 30 and 33**

Claim 28 does not appear to involve an inventive step based on documents 1 and 2.

It would be easy for a party skilled in the art to provide in document 1 a conductive layer similar to the one in document 2.

Claims 31 and 32

Claims 31 and 32 do not appear to involve an inventive step based on documents 1-3.

See the comments for claims 4 and 5.

Claim 34

Claims 34 and 35 do not appear to involve an inventive step based on document 1.

As indicated with respect to claims 6, 14 and 15, the conditions of document 1 satisfy the conditions for a part with a size corresponding to one sub-pixel of anode electrode unit described in the specification not to vaporize, and it is recognized that such vaporization would not occur in document 1 as well.

Claim 36

Claim 36 does not appear to involve an inventive step based on documents 1 and 2.

It would be easy for a party skilled in the art to provide in document 1 a conductive layer similar to the one in document 2.

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